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ABSTRACT

This document reports on the history of social and behavioral research studies concerning nuclear war since 1945, highlighting those studies that focused on adolescents and their feelings of fear, hopelessness, powerlessness, and denial. A study, designed to assess the reactions of adolescents in grades six to eight to the threat of nuclear war is described in terms of the participants, instrumentation, and results. The developed instrument, the Nuclear Anxiety Inventory, found that the major factors affecting students' beliefs and feelings are fear, futurelessness, and powerlessness. Moreover, the fear that adolescents experience is both cognitive and psychophysiological. Powerlessness is reflected in student beliefs that they cannot affect change and have no control. Adolescent feelings of futurelessness include beliefs in the futility of planning for the future, in near-future extinction, and in living life as fully as possible when young, because so little time may remain. Thirty-two references, the inventory questionnaire, and tables are included. (DHP)

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An Inventory Designed to Measure the Impact of the Threat of Nuclear War on Adolescents: Dimensions of Fear, Futurelessness, and Powerlessness*

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C. Patricia Hanley and Daniel J. Christie

Abstract

A Nuclear Anxiety Inventory for adolescents in grades 6-8 was developed. For the pilot version, Chronbach's alpha was employed to assess inter-item consistency, while a principle component factor analysis with Harris-Kaiser rotation was used to evaluate construct validity. Subsequently, a revised, 25 item inventory was administered and yielded a factor structure with three dimensions of nuclear anxiety: fear, futurelessness, and powerlessness.

An Inventory Designed to Measure the Impact of the Threat of Nuclear War on Adolescents: Dimensions of Fear, Futurelessness, and Powerlessness

Ever since 1945, when the devastating power of nuclear weapons were unleashed on Hiroshima and Nagasaki, scholars have sought to understand the psychological impact of living in the nuclear age. Research by social and behavioral scientists immediately following World War II tended to support government policy. Survey research provided an assessment of Americans' opinions and attitudes toward atomic weapons and energy.[4] At the same time, other studies were being conducted with the purpose of reducing soldiers' anxiety levels along with their reluctance to participate in atomic maneuvers.[24,25]

Thereafter, little research was published until the early 1960s, at which time the emphasis shifted toward critical evalutions of U.S. foreign policy, particularly with respect to the policy of deterrence.[3,19,22] Additionally, a number of scholars offered policy recommendations that were designed to reduce international tensions and the arms race.[3,6,10,22,23] Research activity began to wane again, this time in the later 1960s through the 1970s, until a reawakening of interest in the 1980s.[16,17,18]

Morawski and Goldstein[20] have reviewed the literature on psychological research and nuclear issues. They make the point that research on the psychology of living in the nuclear age has ebbed and flowed with the tides of political climate.

Presumably, when international tensions are high, so too is research activity.

Although it is a bit premature to characterize research emphases in the 1980s, it seems likely that the impetus for much of the research during the early 1980s was the trend toward increasing levels of tension between the superpowers. Quite predictably, social and behavioral scientists reacted to the increasingly cold relations. Some scientists took policy positions[7,30] or advocated political activism;[21] while others cautioned that taking a position on such issues requires extrapolating far beyond existing psychological knowledge.[29]

Empirically based research was also undertaken, some of which surveyed the opinions and attitudes of U.S. citizens and policymakers.[9] The latest wave of empirical studies on the impact of the threat of nuclear war has examined a variety of populations, but by far the greatest attention has been given to American youth. The results of much of the survey research that has been done with American children and adolescents in the 1980s indicate that most of them are well aware of the threat of nuclear war by 12 years of age and are concerned about the possibility of nuclear war.[2] Generally, it seems that their concern can be understood in terms of affective and cognitive responses characterized by fear, hopelessness, powerlessness, and denial.[14]

In a number of studies, adolescents report that they <u>fear</u> the possibility of nuclear war.[2,8,27] Some have vivid images of nuclear destruction,[13] images of their parents being dead,[28] and

dreams of nuclear devastation.[22]

Another theme that emerges from research on adolescents is their feeling of hopelessness about the future. They report their future seems uncertain, or at risk because of the possibility of nuclear war.[1,11,13,27] About half of the adolescents report that they expect nuclear war to occur within their lifetime.[1,3] On the basis of detailed interviews with 30 high school students, Goodman et al[13] suggest that nuclear death is a fate that adolescents have come to expect and that a pervasive sense of futurelessness impinges on their everyday life.

In addition to fear and hopelessness, adolescents tend to feel powerlessness in the sense that they feel that they and others are unable to control or remove the threat of nuclear war.[8,12,27] And finally, a fourth theme that has been discovered with some consistency is the tendency for adolescents to suppress their thoughts of nuclear war; they report that they would feel miserable if they allowed themselves to think about it.[27] Lifton[17] has advanced the proposition that older children and adults defend against such fears by using denial or, more broadly, psychic numbing which includes the unconscious mechanism of denial as well as a number of other ego defenses that block feelings.

Studies on the impact of the nuclear threat on adolescents are not limited to the United States. During the current decade research has been conducted in Canada,[11] Finland,[20] the Soviet Union,[3] and Sweden.[15] As might be expected, differences across countries occur with respect to adolescents' opinions about the

destructiveness of nuclear war and the possibility of preventing nuclear war. A robust set of relationships that is beginning to emerge across countries can be summarized as follows: adolescents who worry frequently about the possibility of nuclear war tend to be optimistic about the prospect of preventing nuclear war;[11,12] these concerned adolescents also tend to be high achievers in school and tend to discuss their concerns with others.[11,20]

In short, it is possible to begin gleaning from survey research several consistent findings with regard to how adolescents think and feel about the prospect of nuclear war. Yet, much remains to be learned and it is likely that future investigations would benefit if instruments were developed to measure adolescents' reactions to the threat. Such instruments would make it possible to compare the results of studies employing different populations and to monitor changes over time. Moreover, the development of a measuring instruments would enable practitioners to evaluate the impact of various treatment and educational programs designed to influence adolescents' attitudes toward the threat of nuclear war. Accordingly, the present study is designed to develop an inventory to assess adolescents' reactions to the threat of nuclear war.

Method

Participants

Participants were 731 middle school children from a large school in the midwest who received parental consent to participate in the study. The sample consisted of 365 females,

363 males, and three children who failed to specify their gender. Of these children, 229 attended sixth grade, 252 were seventh graders, and 247 identified themselves as eighth graders. Again, three chldren failed to indicate their grade on the answer sheet. Classrooms were assigned randomly into two discrete samples (Group 1 and Group 2) and data from each group were analyzed separately.

Instrumentation

An initial pool of items was taken from the Nuclear Anxiety Inventory (NAI), an instrument that was developed for use with college students.[14] The inventory is the operationalization of adolescents multidimensional concern abut nuclear war. Preliminary validation studies of the inventory have yielded 4 factors comprising what could be labeled "nuclear concern" or "nuclear anxiety:" (1) emotional and physical fear reactions; (2) hopelessness about the future; (3) denial of the threat; and (4) powerlessness. Although the inter-item consistency for the scale as a whole and for each factor are sufficient for a research instrument,[21] the use of the NAI with children and younger adolescents would be inappropriate because of the difficulty youngsters would have comprehending some of the items (e.g., "Nuclear annihilation is an abstract concept and has no basis in reality"). In addition, completing the 50 item inventory could prove an arduous task for youngsters.

Accordingly, the 50 items of the NAI were presented to four expert judges who were asked to evaluate the appropriateness of the items for use with middle school children. The panel of judges consisted of two teachers, one developmental psychologist,

and one researcher skilled in the construction and validation of measuring instruments. Items were eliminated if they were too abstract, too complex, or unduly repetitive. A total of 19 items were deleted and several items were reworded to form a 31 item pilot version of the Nuclear Anxiety Inventory - Adolescent (NAI-A).

Phase 1

The pilot instrument was administered to adolescents in Group 1 during regular class sessions. Students were told they were participating in a study on students' feelings about nuclear war and were asked to answer the questions as honestly as possible. Teachers were instructed not to discuss the research project or the topic of nuclear war until the study was completed.

After data were collected for 364 participants in Group 1, means and standard deviations for each scale by sex and grade were computed. Subsequently, inter-item consistency for the whole inventory as well as for each scale was evaluated using Chronbach's alpha. A total of 5 items were eliminated from the pilot version due to low alphas (i.e., alpha values that lowered the internal consistency of their respective scales).

Construct validity was assesed using a principle component factor analysis with Harris-Kaiser rotation. This was done in order to discern patterns of intercorrelations of test items. Items having factor loadings less than .25 on all four factors were deleted from the pilot version. The analysis resulted in the elimination of one item, thereby yielding a 25 item inventory.

Phase 2

After analyzing the pilot data, a revised 25-item version of the NAI-A was administered to students in group 2. The same procedures used with Group 1 were repeated with Group 2. Likewise, validity and reliability data were accrued by analyzing Group 2 data the way in which they were analyzed for Group 1. Tukey's studentized range tests for significant differences between grades were also executed. The revised version of the 25-item NAI-A (entitled "Your Feelings about Nuclear War") along with instructions that were given to the students are presented in Table 1.

Insert Table 1 about here

Results

Phase 1

Initial assessment of the validity and reliability of the NAI-A (pilot version) was based upon inter-item consistency evaluation and a principle component factor analysis. Chronbach's alpha coefficients for each scale and for the inventory as a whole were obtained, lending support to the reliability of the NAI-A (.88). Similarly, alphas for 3 scales were favorable: .79-Powerlessness, .90-Futurelessness, .88-Fear. The alpha coefficient obtained for the Denial Scale was low (.43), failing to provide evidence for the usefulness of this scale and construct as part of the inventory. Indeed, results of the principle component factor analysis and scree test indicated

the existence of 3 factors explaining 43% of the variance. The three factors highlighted by both this procedure and a second factor analysis are listed in Table 2. The oblique rotated

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Insert Table 2 about here

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factor solution had a total eigenvalue of 10.39 which accounted for 99% of the variance.

Phase 2

Phase 2 of the analysis was undertaken using data from Group 2 and was executed in much the same manner as Phase 1. Results from these analyses yielded Chronbach's alpha of .90 for the whole inventory. Alphas for the Powerlessness, Futurelessness, and Fear scale were .85, .82, and .86, respectively. A three factor structure was depicted in the principle components factor analysis accounting for 64% of the variance. Results from the oblique rotation factor solution yielded a total eigenvalue of 10.61 which accounted for 97% of the variance (Table 3).

Insert Table 3 about here

Support was found for the hypothesized structure of the construct and the inclusion of specified items on each scale as depicted in Table 4. One item (13) loaded on both Powerlessness and Future-

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Insert Table 4 about here

---

lessness scales, perhaps reflecting the correlated nature of these constructs. Table 5 presents the inter-correlation matrix.

Insert Table 5 about here

Finally, results from Tukey's studentized range test yielded a significant difference in the scores of sixth and eighth grade students ($p < .05$) on the Futurelessness scale indicating a greater degree of futurelessness in the older children. No other significant differences were found.

Discussion

The factor structure of the 25 item NAI-A inventory provides evidence for the general proposition that adolescents' reactions to the threat of nuclear war are multidimensional. Previous research,[1,2,11,12,13,14,26,27] based primarily on questionnaires and structured interviews, led us to expect that four major factors would be salient in adolescents' reactions to the threat of nuclear war: fear, denial, powerlessness, and hopelessness. Instead, three major factors emerged: fear, futurelessness, and powerlessness.

The fear adolescents experience is both cognitive and psychophysiological. The cognitive component is reflected in the item "I worry about nuclear war." Psychophysiologically, fear engenders a variety of somatic reactions that accompany thoughts of nuclear war: feeling ill, having a dry mouth, accelerated heart rate, knots in the stomach, and a sick feeling in the pit of the stomach. Taken together, these findings are consistent with previous research indicating that fear is an important dimension of adolescents' reactions to the threat of nuclear war.[1,8,11,12,13,26,27,28,32]

A complex set of feelings and beliefs are reflected in items that loaded on the powerlessness factor. Adolescents indicate that there is nothing they can do about the threat of nuclear war; that they are helpless in the sense that they cannot change things; that they have no power, no control; that a regular person can do nothing; that the situation is hopeless, out of hand and confusing; and that the situation is out of their control.

While previous investigators have emphasized adolescents sense of hopelessness in the face of the threat of nuclear war, the inventory yielded a factor more akin to futurelessness. All of the items that loaded on the "futurelessness" factor allude to either the futulity of planning for the future (e.g., it's silly and useless), or the forclosure of future opportunities (e.g., not getting to do things, not wanting to have a family, and the like). Moreover, the threat of nuclear war tends to encourage what could be dubbed a "short term hedonistic" tendency in the sense that adolescents report that the threat of nuclear war makes them feel like they "might as well have as much fun as (they) can now, because (they) don't have much time left." These findings corraborate previous findings that adolescents have an image of extinction and a sense of futurelessness.[10]

The futurelessness factor was the only one that varied with age. Eighth graders rated their degree of futurelessness higher than did sixth graders. There is little research available that can guide efforts to explain such a difference, however, it seems likely that with age time horizons lengthen; hence, older

adolescents would give more thought to the future than younger adolescents.

The NAI-A did not yield a factor related to denial. Such a mechanism would undoubtedly be difficult to measure, perhaps even inaccessible by way of inventory questions if denial is primarily an unconscious defense against anxiety. Alternatively, it is possible that items which were designed to measure denial were too abstract for adolescents' comprehension. Yet another possibility is that the use of denial is a developmental phenomena that emerges during later adolescence. In any case, the NAI-A does not provide an index of the degree to which adolescents use denial as they grapple with the threat of nuclear war.

Aside from theoretical issues that have been raised, the present work holds the promise of contributing to future research endeavors by offering an instrument that has a relatively high degree of internal consistency and construct validity. The Nuclear Anxiety Inventory for Adolescents should be most useful to social and behavioral scientists as well as practitioners who wish to have multi-dimensional measures of adolescents' reactions to the threat of nuclear war.

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Table 1. The following instructions were given to students in grades 6-8. The 25 items which appear after the instructions comprise the revised version of the Nuclear Anxiety Inventory for Adolescents (NAI-A)

Your Feelings about Nuclear War

This is not a test. There are no right or wrong answers. Read each statement carefully and decide how often it fits the way you feel. Spend about the same amount of time on each statement. You will notice that some statements have the same meaning as other statements. That is OK. Just give your true feelings as best as you can.

Mark number 1 if the statement never describes you.

Mark number 2 if the statement hardly ever describes you.

Mark number 3 if the statement sometimes describes you.

Mark number 4 if the statement often describes you.

Mark number 5 if the statement always describes you.

1. When I think about the threat of nuclear war I know there's nothing I can do.
2. I probably won't have children because of the threat of nuclear war.
3. When I think about the threat of nuclear war I realize it's out of my control.
4. When I think about the threat of nuclear war I feel helpless to change things.
5. When I think about the threat of nuclear war I feel like I have no power to do anything about it.

6. I'm very frightened about what might happen to me if a nuclear war were to happen.
7. When I think about the threat of nuclear war I realize that I have no control.
8. I worry about nuclear war.
9. When I think about the threat of nuclear war I feel hopeless.
10. When I think about the threat of nuclear war I'm afraid of what life might be like if I were to survive.
11. When I talk about the threat of nuclear war I feel bad, so I change the subject.
12. Hearing people talk about all the destruction that could occur if a nuclear bomb was dropped gives me a knot in my stomach.
13. When I think about the threat of nuclear war I think things are out of hand and confusing. No one can do anything about it.
14. My mouth gets dry when I allow myself to think about what could happen to my family during a nuclear attack.
15. When I think about the threat of nuclear war I think making plans about my future is useless.
16. I get a sick feeling in the pit of my stomach when I hear about radiation poisoning that happens after a bomb explodes.
17. When I think about the threat of nuclear war it seems silly to make plans for when I get older.
18. When I imagine what would happen if there was a nuclear war my heart beats faster.
19. When I think about the threat of nuclear war I think about all the things I won't get to do.
20. Just thinking about nuclear war makes me feel ill.

21. When I think about the threat of nuclear war I feel like I might as well have as much fun as I can now, because I don't have much time left.
22. A regular person can do nothing about the threat of nuclear war.
23. When I think about the threat of nuclear war I don't think I'll have time to do the things I'd like to do.
24. When I've heard about nuclear war on television or the radio, I have felt nervous.
25. When I think about the threat of nuclear war I feel like I don't want to have a family when I get older.

Table 2. Results of the principle components factor analysis of the Nuclear Anxiety Inventory for Adolescents, pilot version.

Factor	Factor Name	Eigenvalue	Prop. of Variance Explained
1	Fear	7.11	.68
2	Futurelessness	1.95	.19
3	Powerlessness	1.33	.13

Table 3. Results of the principle components factor analysis of the Nuclear Anxiety Inventory for Adolescents, revised version.

Factor	Factor Name	Eigenvalue	Prop. of Variance Explained
1	Fear	6.79	.62
2	Futurelessness	2.26	.20
3	Powerlessness	1.56	.14

Table 4. Factor loadings for the final principle axis factor analysis with Harris-Kaiser rotation.

Item	Fear	Powerlessness	Futurelessness
1		.7275	
2			.4949
3		.7576	
4		.6985	
5		.7371	
6	.7625		
7		.7914	
8	.7215		
9		.4667	
10	.4086		
11	.2756		
12	.7572		
13		.2986	(.2556)
14	.6227		
15			.7598
16	.7018		
17			.7098
18	.5761		
19			.5449
20	.6135		
21			.6663
22		.3927	
23			.7452
24	.5443		
25			.7055

Table 5. Inter-correlation matrix for three factors.

Factor		1	2	3
(Fear)	1	1.0000	.4012	.5734
(Powerlessness)	2	.4011	1.0000	.3612
(Futurelessness)	3	.5734	.3612	1.0000